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Letters

Re-Examination of the Antithrombotic Regimen in the STEMI-RADIAL Trial

In the STEMI-RADIAL (ST Elevation Myocardial Infarction treated by RADIAL or femoral approach) trial (1), the primary endpoint of the cumulative incidence of major bleeding and vascular access site complications at 30 days was lower with transradial intervention than with transfemoral intervention (1.4% vs. 7.2%, $p = 0.0001$). There was no difference in death, myocardial infarction, and stroke. However, this trial included suboptimal antithrombotic regimens, including high doses of heparin and a high percentage of patients treated with glycoprotein IIb/IIIa inhibitors. In patients with ST-segment elevation myocardial infarction (STEMI) being referred for primary percutaneous coronary intervention, the American College of Cardiology Foundation/American Heart Association guideline recommends a bolus of 50 to 70 IU/kg to achieve an activated clotting time of 200 to 250 s when treatment with a glycoprotein IIb/IIIa inhibitor is planned and 70 to 100 IU/kg to achieve an activated clotting time of 250 to 300 s (as measured by the HemoTec device, HemoTec Inc., Englewood, Colorado) when no treatment with a glycoprotein IIb/IIIa inhibitor is planned (2). Doses of heparin in excess of this have not been associated with improved pre-procedural patency or post-procedural outcomes. Patients who underwent transfemoral intervention received an average dose of heparin of 105 IU/kg, despite nearly half of the patients being treated with glycoprotein IIb/IIIa inhibitors.

Bivalirudin, a direct thrombin inhibitor shown to decrease bleeding and improve outcomes compared with heparin and glycoprotein IIb/IIIa inhibitors in patients undergoing an invasive strategy, was not used in the STEMI-RADIAL trial (3). The HORIZONS-AMI (Harmonizing Outcomes With Revascularization and Stents in Acute Myocardial Infarction) trial, which compared patients with STEMI randomized to treatment with heparin plus glycoprotein IIb/IIIa inhibitors or bivalirudin, reported a 34% reduction in mortality in patients treated with bivalirudin ($p = 0.047$), driven by a reduction in major bleeding of 40% ($p < 0.001$).

The applications of the trial findings are suspect given the suboptimal antithrombotic regimens and the liberal use of potent parenteral antiplatelet agents (4). This is an important consideration especially for patients with acute coronary syndrome, in whom the negative implications of major bleeding are even greater. Ultimately, a trial comparing transradial with transfemoral intervention in patients treated with bivalirudin, with potent antiplatelet therapy, and without adjunctive glycoprotein IIb/IIIa inhibitors as well as possibly incorporating ultrasound guidance for vascular access is needed (5,6).

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REPLY: Re-Examination of the Antithrombotic Regimen in the STEMI-RADIAL Trial

We are pleased to address Dr. Lee's comments on the results of the STEMI-RADIAL (ST Elevation Myocardial Infarction treated by RADIAL or femoral